



Front Country Trails Multi-Jurisdictional Task Force

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AGENDA DATE: March 2, 2011

TO: Front Country Trails Multi-Jurisdictional Task Force

FROM: Rebecca Mordini, Front Country Trails Coordinator

SUBJECT: Trail Count Project – For Action

RECOMMENDATION: That the FCT Multi-Jurisdictional Task Force receive a status report on the Trail Count Project, including the pilot project with game cameras, and recommend that the FCT Program implement a manual trail count project in April 2011.

DISCUSSION:

The purpose of this staff report is to provide the Task Force with a report on the use of game cameras for the Trail Count Project and outline a proposal to implement a manual trail count project in April 2011.

Background

The Santa Barbara Front Country Trail Management Recommendations include the recommendation for trail user surveys, a broad category that includes several different types of information collection. Trail survey information would assist in the development of long-term management strategies, help prioritize trail maintenance, inform outreach and education efforts, and provide information for the development of trail guidelines.

Two primary methods of obtaining trail count data were reviewed with the Task Force in June 2010: manual counts and automatic counts. Manual counts are the most common type and can be combined with surveys to collect more detailed user information. Manual counts can require significant manpower and time, which in many communities is provided by volunteers. Less labor-intensive automatic methods of obtaining trail counts with infrared counters, magnetic counters, and trail cameras can be more efficient and cost effective.

Staff recommended that the FCT Program pursue the use of game cameras for a trail count project based on information and recommendations from trail management consultants, other public trail agencies and industry representatives. Trail cameras were selected due to the relative low-cost (\$100-\$200/unit) and expected data collection

ability. At that time, it appeared that others had successfully used trail cameras in this price range to collect user data. This option was affordable, unbiased, and provided a digital record of user types that could easily be confirmed.

Summary of Results

After experimentation with three models of game cameras from July – October 2010, it has not been possible to obtain consistent and reliable results that could be used to collect data on the number of each type of trail user.

The primary obstacles are the “wake-up” time of the camera and camera placement. The “wake-up” time is the time it takes for the camera to snap the first photo when it is initially triggered. Due to a minimum three-second wake-up time, a user passes out of the range of the camera before that first photo is snapped.

The other obstacle is camera placement. In order to give the camera time to get the first photo, i.e. “wake-up”, it needs to be placed angled down the trail. It is very challenging to get a good camera angle while at the same time having the camera out of sight of the approaching trail user. This issue is important for a number of reasons, including: 1) to reduce vandalism, 2) to reduce the potential for data manipulation and 3) to protect the camera. One camera was stolen from the trail despite being locked with cable to a tree.

Project Details

The first step of the project was to select the model of camera that best suited the project needs and budget. Key considerations included variable photo quality, multi-shot capability, combined heat and motion sensors, interval speed and wake-up time.

Low resolution photo quality was adequate since the goal was to identify the type of user, but not the identity of the user. In order not to miss trail users closely spaced on the trail, cameras needed to take multiple shots in one trigger. The combination of heat and motion was needed to ensure that a live body is triggering the camera. Motion sensors alone tend to be triggered by waving branches or leaves. A three-second interval between shots was also deemed adequate given funding limitations. At the time of the initial research, wake-up time was not quantified in most of the camera listings. This is the amount of time it takes the camera to activate when first triggered and then catches the first photo.

The camera that appeared to meet the specifications was the Moultrie Game Spy. Although it was not the least expensive camera, it included all the necessary features for \$100 per unit.

Initial Test – Snyder Trail

After initial setup and testing, the Moultrie Game Spy camera was set up on the Snyder Trail in the Los Padres National Forest. The Snyder Trail was chosen for initial testing because it is close to the Ranger station and has bike, hiker, and vehicular traffic. This

location allowed for the camera to be set up and repositioned with the aid of Forest Service staff and easily checked several times during the day. Different camera settings were tried including, with and without flash, different resolutions and the single and multi-shot options.

Initial results showed several pictures snapped during set up, which showed the camera was working. However the remaining pictures, about 30 or so with each test, generally showed no people. As the test site was close at hand, it was easy to confirm that bikes, hikers, and trucks had been on the trail, but had not been captured by the camera.

In subsequent trials the camera was placed at different angles down the trail so that a user would be in the camera view for several seconds while walking towards the camera. It was anticipated that just the right placement would give the camera time to wake up and capture the user photo. However, after several weeks of experimentation, very few shots of actual trail users were obtained.

Subsequent Test – Tunnel Trail, Cold Spring Trail, Manning Park

After reviewing the results and further research with Hunting/Fishing Outfitter Cabela's, two different cameras, the Primo Truth Cam and the Bushnell Trophy Cam, with faster wake-up times were purchased.

The new cameras set up on Tunnel and Cold Spring trails yielded similar results to the Moultrie. The cameras were then set up in the Manning Park parking lot, a more controlled environment. The focus of the camera test in Manning Park was the wake-up time. Again, the results indicated that the camera did not consistently capture images of users. As a result it was determined that the cameras were not consistent enough to be relied on for data collection. Further research of higher performance cameras indicated that “wake-up” time may still not be reliable.

Review of Infrared Counters

With the failure of the game cameras, staff reviewed the feasibility of using infrared counters. Infrared counters are the most common automatic trail count method. For a simple baseline measure of the number of users and patterns of use at different times and places, infrared counters are useful. However, they are not generally used to count users by number and type. In addition, it is not known if they would detect multiple users walking side by side, or if bikes would trigger the counter twice. In order to distinguish a hiker from an equestrian, two counters would need to be positioned at different heights, so that if both were triggered, it would be assumed that an equestrian had passed by. Unfortunately, it is not certain whether these configurations would give a reliable, consistent measure of both number and type of user. In addition, infrared units are expensive (\$1,200 or more) and would require staff management.

Next Step – Conduct a Manual Count Project in April 2011

Since trail user information remains an important factor in the development of long-term management strategies, staff is recommending the implementation of a manual trail

count project in April 2011. Although it would only serve as a snap shot of trail use and users for one period of time, the data would provide preliminary information. If it is successful, a subsequent trail count could be conducted in fall 2011, and an annual trail count could be used to track some trends over time. Annual trail counts are popular methods for determining trail use in communities around the country.

Manual Count – Scope of Work

The trial count will include one weekday and one weekend day, such as Wednesday and Saturday during the week of April 4, 2011. Three trails, such as Jesusita (Tunnel side), San Ysidro, Cold Spring and/or Rattlesnake provide a geographic spread and include multi-user and restricted trails. If resources are available for a fourth and fifth trail, Cold Spring and Romero Trail would be included.

A counting station will be set up at or near the trailhead for each of the chosen trails. Two people, preferable a staff person and a volunteer will be assigned to each station. Each station will have two shifts, 7 am to 12 noon and 12 noon to 5 pm. While there are certain to be trail users before and after this time period, these times will provide the most accurate count, without the necessity of a third shift. For three trails, a total of twelve staff and volunteers will be needed each day.

A tally sheet will be used to count the number of each user type, including hikers, runners, bikers, equestrians, and dogs. The tally sheet will be divided by hour, so that trends throughout the day can be captured. Since the manual trail count will also provide an opportunity for trail user education, information about trail etiquette, trail safety, and volunteer opportunities will be available. The following table illustrates the dates and locations for which staff will be assigned and volunteers will be needed.

Date/Trail	Jesusita (Tunnel side)	San Ysidro	Rattlesnake	Cold Spring
<i>Wednesday April 6</i>				
7 am – 12 noon	Staff Volunteer	Staff Volunteer	Staff Volunteer	Staff Volunteer
12 noon – 5 pm	Staff Volunteer	Staff Volunteer	Staff Volunteer	Staff Volunteer
<i>Saturday April 9</i>				
7 am – 12 noon	Staff Volunteer	Staff Volunteer	Staff Volunteer	Staff Volunteer
12 noon – 5 pm	Staff Volunteer	Staff Volunteer	Staff Volunteer	Staff Volunteer

Recommendation

That the FCT Multi-Jurisdictional Task Force recommend that the FCT Program implement a manual trail count project in April 2011.